

APPLICATION FOR UNITED STATES LETTER PATENT

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TITLE: **STAPLE PULLER WITH PLIERS FOR REMOVING
STRAGGLERS**

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BACKGROUND OF THE INVENTION

The present invention is directed to an improved staple puller for removing wire staples from pages of paper. More particularly, the invention is directed to a staple puller that is provided with clamping surfaces for gripping the wire of a staple that has one leg removed from the pages and the other leg still embedded in the pages, so that the embedded leg can be pulled free.

Figure 1 illustrates a left side view of a conventional staple puller 10. It includes a first jaw member 12, a second jaw member 14, and a rivet 16 that extends through holes in the members 12 and 14 to pivotably join them together. The jaw members 12 and 14 are made from sheet metal and are generally U-shape in cross-section. That is, the jaw member 12 includes a left side wall 18, a right side wall (not shown) having the same shape as the wall 18, and a back wall (not shown) that joins the left and right side walls. Similarly, the jaw member 14 includes a left side wall 20, a right side wall (not shown) having the same shape as the left side wall, and a back wall (not shown) that joins the left and right side walls. The back wall of the jaw member 14 has a width that is slightly smaller than the width of the back wall of the jaw 12, so that the side walls of the jaw member 14 can be accommodated between the side walls of the jaw member 12.

At the front end portion 24 of the staple puller 10, the jaw members 12 and 14 have teeth 26. A spring 28 is wrapped around the rivet 16 and has legs that engage the back walls of the members 12 and 14, urging the staple puller 10 to an open position wherein the teeth 26 are spread apart. However, the staple puller 10 can be moved to a closed position by pressing the jaw members 12 and 14 together against the force of the spring 28. Plastic finger grips 30 are mounted on the jaw members to facilitate moving the staple puller 10 to its closed position.

During use, the teeth 26 of either the first or second jaw member 12 or 14 are hooked under the wire of the staple that is to be removed from a group of papers, and the staple puller 10 is then squeezed toward its closed position. This slides the teeth of the other jaw member under the staple, too. Further movement of the staple puller 10 toward its closed position generally pulls the staple from the group of papers.

Figure 2 illustrates a problem that sometimes occurs during this process. Here, one leg 32 of a staple that has been mangled during a staple-pulling attempt remains

embedded in a stack 34 of paper. This is what I call a "straggler." An attempt to remove a straggler with one's fingers is rarely successful and may result in a paper cut or puncture wound by the wire. Scissors can sometimes be used to pry out a straggler, but more frequently the problem is solved by grabbing half of the stack with one hand and half with the other hand and then pulling them apart, thus freeing the straggler from half of the stack while leaving it embedded in the other half. The process is then repeated until the straggler can be extracted with the fingers. This removes the straggler but usually damages at least some of the papers.

SUMMARY OF THE INVENTION

The object of the present invention is to provide an inexpensive staple puller with built-in pliers that provide clamping surfaces for gripping a straggler, to facilitate its extraction.

This object can be attained by providing a bent flange on one of the jaw members to cooperate with an edge on the other jaw member in the manner of pliers, permitting a straggler to be gripped and extracted. The pliers may be located forward of the rivet that pivotably connects the jaw members. However, the pliers are preferably located behind the rivet so that the pliers can grip the straggler closer to the paper, without the finger grips getting in the way and preventing a close-in grip.

Pliers are preferably provided at both the left side walls and the right side walls of the jaw members. This permits left side and right side flanges to be located at the same height and come into contact with edge surface of the other jaw member simultaneously, stopping the closure of the jaw members symmetrically even if manufacturing tolerances are loose.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side view of a prior art staple puller;

Figure 2 is a cross sectional view of a corner portion of a stack of pages, with a straggler embedded in the stack;

Figure 3 is a side view of a staple puller in accordance with the present invention, without its finger grips;

Figure 4 is a side view of one jaw member of the staple puller shown in Figure 3; Figure 5 is a side view of the other jaw member of the staple puller shown in Figure 3; and

Figure 6 shows a broken-away portion of the jaw member illustrated in Figure 5, before a flange is bent outward.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The right side of an improved staple puller 36 in accordance with the present invention is shown (without its finger grips 30) in Figure 3. Its construction is the same as that of the staple puller 10 shown in Figure 1, except at the back end portion 38. The left side wall 40 of the first jaw member 12 is shown in Figure 4, and includes a clamping surface 42. The left side wall 44 of the second jaw member 14 is shown in Figure 5. It includes a slot 46 with a bent-out flange 48 at the slot's upper end. The flange 48 provides a clamping surface that is positioned to meet the clamping surface 42 when the staple puller 36 is moved to its closed position. The clamping surfaces 42 and 48 act as the jaws of pliers to grip a straggler that has been inserted through the slot 46, so that the straggler can be pulled out.

Figure 6 illustrates a small part of the side wall 44 during manufacture of the jaw member 14. When the slot 46 is punched out, a tab of sheet metal is left extending into the slot. This tab is then bent outward from the plane of the paper, along dotted line 50, to become the flange 48.

Although not shown, it is preferable that clamping surfaces be provided on the right side walls as well.

It will be apparent to those skilled in the art that the staple puller described above is susceptible to various changes, modifications, and adaptations, and it is therefore intended that such changes, modifications, and adaptations be included within the scope and range of equivalents of the appended claims. One possible modification that should be mentioned is that the clamping surfaces 42 and 48 (preferable on both side walls) can be located forward of the rivet that holds the jaw members 12 and 14 together. However, depending on the configuration of the finger grips 30, this might mean that the straggler could not be gripped very close to the top sheet of paper.